User Manual

cs-micro rocket competition

Power Specs:
32 A / 40 A Peak
8 Power Programs
7 Program-Features
4,8 - 12.0 V
2 - 3 Lipo
Forward / Brake
Forward / Brake / Reverse

Optimised for:
1:18 Onroad
1:18 Offroad
NiCd, NiMH
Lipo Batteries
and much more

Motor Specs:
above 10 Turns, max 10500 kv
4,8 - 12,0 V
Sensorless Motors
180er - 380er Motorsize

The CS-Micro Rocket Competition speed controller has everything, what racers need.

Best.-Nr. C130100

CS-ELECTRONIC

Z-C130100AE

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1. Dear customer,

congratulations for buying your new digital CS-Micro Rocket Competition Brushless speed controller for brushless motors from CS-ELECTRONIC. You can be sure having purchased a product, which was developed on the basis of the newest technical knowledge and constructed as well as optimized for the use in RC-Cars. We have realized several pioneering technologies in this product and are proud to present to you a intelligent high performance speed controller, which has outstanding features in performance, functionality and safety.

2. Range of application

The CS-Rocket Competition Brushless Speed Controller is conceived for 1/18 RC-cars with an operating voltage from 4.8 V to 12 V. It can be used with all current sensorless brushless motors in the “180-“ to “380-size”.

3. Features

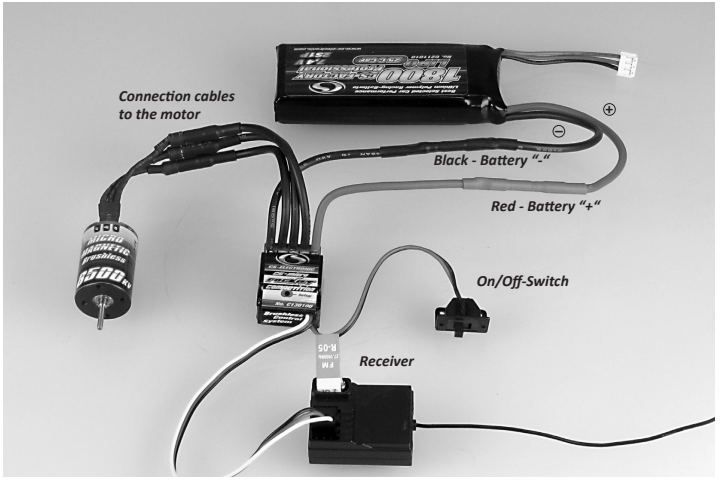
- **8 Power programs =** graded drive profiles for different cars and tracks
- **5 selectable drive profiles =** forward / brake / reverse / security brake / delayed reverse
- **Simply change the power programs =** with the speed commander
- **PDM Precise Digital Drive Mode Technology =** exact, sensitive and controllable driving feeling without sensors
- **Auto Battery Cut Off =** configurable intelligent monitoring for NiMH and Lipo
- **TPI Temperatur Monitor =** secure protection against damage by overheating
- **CDT Cool Drive Technology =** intelligent digital power drive is used for minimized loss and low controller temperature.
- **PCB Integrated Powercapacitors =** most effective and maximized protection without tiresome high resistant cables
- **DCB Drive Controlled Break Software =** exact revolution controlled braking efficiency at all speeds
- **Re-Charging =** recharging of the drive battery when braking gives more running time and power
- **Mega BEC System =** powerful and stable for trouble fee operating
- **MegaFlex Powercable =** high flexible 1,5 mm² LowDrill-silverbraids for maximum power

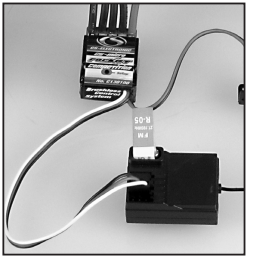
3. Installation

The receiver as well as the receiver antenna must have as much as possible distance to the speed controller. Current-carrying battery- or motor-cables should not be near the antenna.
Avoid direct contact of the antenna to graphite or metal parts. To avoid any interference problems, guide the antenna on the direct way to the top of the car and do not coil up the antenna. Sufficient cooling openings in the body as well as cases free of dust or dirt increase the efficiency and the life time of electronic components.

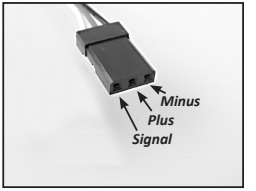
4. Connection of the components

The CS-Rocket Competition is factory equipped with 1,5-mm²-power cables for the connection to the battery. Please use only suitable high current plugs (i.e. C180710 und C180711) and pay attention to the polarity "+" and "-". A short circuit or a wrong polarity results in a serious damage of the speed controller.
The connection to the motor is done with 1,5-mm²-power cables marked with "A", "B" and "C". These cable are factory equipped with 3,5 mm gold plugs (C180711). These gold plugs fit with the CS-Micro Magnetic Brushless Motors. To change the direction of rotation, just exchange two of the three motor cables.





Receiver connection:
The black receiver plug is connected to the plug-in place 2 of your receiver.

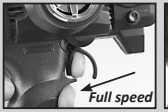


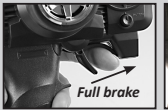
Polarity of the receiver connection:
Please observe the polarity as follows::
Red is receiver "+"
Black is receiver "-"
White is receiver "signal"

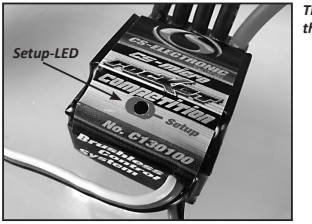
6. Basic Settig of the speed controller/ Transmitter-set up

Requirements for the basic settings are the following conditions:

a) The power cable „A“, „B“ und „C“ of the speed controller must be connected to the motor!
b) The controller BEC-cable is connected to the receiver in plug-in place 2!
c) Now switch on the transmitter and you can begin with the basic set up!
d) The direction of rotation of the throttle-function of the transmitter must be set to “NOR“ (normal)!
e) Special setting for Futaba transmitters: The direction of rotation must be set to “REV“ (reverse)!
f) The end point adjustment of the throttle (EPA) must be set to 100 % and the end point of the brake must be set to 100 %.
g) Now connect the battery to the speed controller, take care of the polarity!
h) Push the throttle trigger of the transmitter to full speed.
i) The switch of the CS-Rocket-controllers is now set to ON! The setup LED shines red and you hear some signal sounds.
j) Set back the throttle trigger to neutral, you hear 4 beeps
k) Push the throttle trigger to full brake - you hear again 4 beeps.
l) The throttle trigger is now moved back to the neutral position and the basic setup is finished.
n) Switch off the speed controller







The speed controller with the Setup-LED

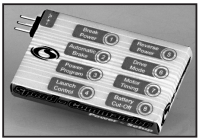
Check of the basic setup “Speed-Controller-Transmitter-Adjustment”:

a) in neutral position of the throttle trigger the LED shines green.
b) at slow acceleration the LED goes out.
c) at full throttle, the yellow LED shines green again.
d) at slow braking the LED go out,
e) at full brake, the LED shines green again.

The speed controller is now calibrated to your transmitter.

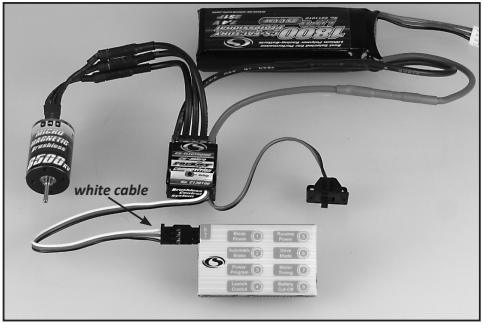
6. Speed Controller Setup

The CS-Micro Rocket Competition Brushless comes with 8 different program settings, which can be selected for different types of RC-Cars and different handling characteristics. The setting is done with the Speed Commander included. This Speed Commander allows to you to change all settings fast and efficiently.
The table on the page 6 shows the recommended use of the different programs.



The included Speed-Commander

Connection of the Speed-Commander:



a) Remove the connector of the speed controller from the receiver.
b) Connect the receiver plug with the Speed-Commander. The white cable must be outside.
c) Connect the battery and switch on the controller.

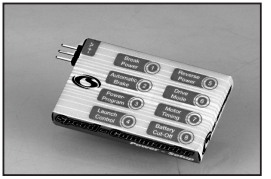
Programming with the Speed-Commander

a) The speed controller recognizes the Speed Commander automatically and swithes to the programming mode.
b) As long as the controller is in the programming mode you hear a recurring signal sound.
c) All 8 functions of the controller are set in two steps:
   1. step: Press the grey dot of the desired function.
   2. step: Press the grey dot of the desired value to be adjusted.

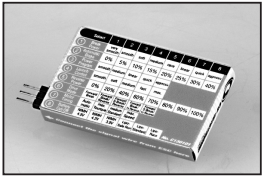
Example:
"Break Power" set to "medium":
First press 1 and then 4.
The controller confirms the setting with the 1 long and 4 short signal beeps.

d) To change more settings repeat item c).
   You can change as much settings as you want.
e) To finish the programming switch off the controller and disconnect the battery.
f) After finishing the programming disconnect the Speed Commander and put the receiver plug back into the plug in place 2 of the receiver.

The front page of the Speed Commander with the keays for the programming



On the rear page of the Speed Commander you see all set-table values



Speed – Commander

Power – Setup

Select	1	2	3	4	5	6	7	8
1 Break Power	very smooth	smooth	soft	medium	race	linear	quick	aggressiv
2 Automatic Brake	0%	5%	10%	15%	20%	25%	30%	40%
3 Power Program	smooth	medium	linear	quick	aggressiv			
4 Launch Control	smooth	soft	medium	fast	max.			
5 Reverse Power	0%	20%	40%	60%	70%	80%	90%	100%
6 Drive Mode	Forward Break	Forward Break/ Reverse	Forward S-Break/ Reverse	Forward Break/ 1s Reverse	Forward S-Break/ 1s Reverse			
7 Motor Timing	Auto-matic	max. Tourque	medium Standard	max. Speed				
8 Battery Cut-Off	NIMH 4.5V	NIMH 4.2V	NIMH 3.9V	Lipo-Safe Run	Lipo-Standard	Lipo-Race		

No. C130101

CS-ELECTRONIC

Functions of the speed controller:

1. Brake Power

Bremse MAX. = Adjustable maximum brake force for throttle trigger on full brake at the transmitter. Selectable in 8 grades from “very smooth” to “aggressive“ = maximum force.

1. **very smooth**
2. **smooth**
3. **soft**
4. **medium**
5. **race**
6. **linear**
7. **quick**
8. **aggressive**

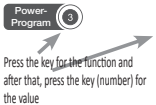
2. Automatic Brake

Automatic Bremse = adjustable brake force with the throttle trigger in neutral position for tighter cornering. Selectable in 8 grades between 0 and 40 %. 40% is used for Crawler Cars as parking brake ans is 80% in reality.

1. **0%**
2. **5%**
3. **10%**
4. **15%**
5. **20%**
6. **25%**
7. **30%**
8. **40%** recommended for Rock Crawler as parking brake.

3. Power Program

Power-Program = graded driving profiles for different cars and tracks. Selectable in 5 grades from “smooth“ to “aggressive“



1. **smooth**
2. **medium**
3. **linear**
4. **quick**
5. **aggressive**

4. Launch Control

Launch Control = adjustable start automatic for maximum acceleration. Selectable in 5 grades from “smooth“ to „max.“. The Launch Control function is only effective when a car is accelerated after a total stop of the motor, i.e. at the start.

1. **smooth** - very gentil start acceleration at very less grip (dusty outdoor track).
2. **soft** - gentil start acceleration (normal outdoor track)
3. **medium** - medium start acceleration (humid outdoor track)
4. **fast** - fast start acceleration at high grip (carpet indoor track)
5. **max** - maximum start acceleration at high grip (carpet indoor track with high traction)

5. Reverse Power:

Reverse speed = adjustable speed for reverse. Selectable in 8 grades from 0% to 100%.

1. **0%** - no reverse
2. **20%** of the maximum reverse speed
3. **40%** of the maximum reverse speed
4. **60%** of the maximum reverse speed
5. **70%** of the maximum reverse speed
6. **80%** of the maximum reverse speed
7. **90%** of the maximum reverse speed
8. **100%** - maximum reverse speed

6. Drive Mode

Drive Mode = adjustable mode for the use of the reverse function. 5 different settings can be done:

1. **Forward/Break** - forward and brake, no reverse (for races)
2. **Forward/Break/Reverse** - forward, brake and reverse. Moving the throttle trigger to full brake the first time, the car will brake, moving the throttle trigger the second time, the car drives revers.
3. **Forward /S-Break/Reverse** - forward, security brake and reverse: Moving the throttle trigger to full brake the first time, the car will brake, moving the throttle trigger the second time, the car will brake until it stops and then it drives reverse.
4. **Forward / Break / 1s Reverse** - forward, brake and after a second reverse. Moving the throttle trigger to full brake, the car brakes and after 1 second it drives reverse.
5. **Forward / S-Break / 1s Reverse** - forward, security brake and after a second reverse. Moving the throttle trigger to full brake, the car brakes and after 1 second the car will brake until it stops and then it drives reverse.

7. Motor Timing

Motor Timing = setting of the timing of the motor. Selectable are 4 different settings:

1. **Automatic** - The timing is adjusted by the speed controller automatically to the driving situation.
2. **max. Torque** - The timing is adjusted by the speed controller automatically to maximum torque.
3. **medium Standart** - The timing is adjusted by the speed controller automatically to an even relationship between torque and rotational speed.
4. **max. Speed** - The timing is adjusted by the speed controller automatically to maximum speed.

8. Battery Cut off

Undervoltage switching off = The controller switches off to protect the battery against damage.

1. **NiMH 4.5 V** - recommended for 6 or more NiMH-cells.
2. **NiMH 4.2 V** - recommended for a battery with 5 NiMH-cells.
3. **NiMH 3.9 V** - recommended for a battery with 4 NiMH-cells.
4. **Lipo Save Run** - switch off at 3,7 Volt per cell.
5. **Lipo Standard** - switch off at 3,5 Volt per cell.
6. **Lipo Race** - switch off at 3,2 Volt per cell.

Finishing the Programming

After the setting of all programs you can use the speed controller.
Please note: After each program selection the gear ratio has to be exactly adjusted and must be checked after a short running time with the temperature of the brushless motor. It is sufficient to strongly grasp the motor with three fingers. If you can hold the motor for appr. 4 seconds tight, it is o.k. If not, the temperature is raised over 65 °C. In this case you have to change the gear ratio immediately by using a smaller pinion to avoid any serious damage or destruction of one of the components.

9. Diagnostics

It can have several reasons if your CS-Micro Rocket Competition speed controller does not work properly. First check all components connected to the speed controller to exclude other failure sources. If you can not solve the problem, the following table can help you with the diagnostic:

Diagnostic		
Display/failure	**Reason**	**Correction**
Motor does not start but Steeringservo works	Motor defect	Check motor and exchange
	Receiver cable is wrong or not connected	Check connection and reconnect cable, Receiver plug in place 2
	Receiver cable defect	Exchange receiver cable
Motor does not start and Steering Servo does not work	Receiver cable of the controller is wrong or not connected	Check connections an reconnect: Servo = Receiver plug in place 1 Speed controller = Receiver plug in place 2
	Receiver defect	Exchange
	Crystal defect	Exchange
	Transmitter defect	Exchange

Diagnostic		
Display/failure	**Reason**	**Correction**
Car drives backwards or Dirction of rotation of the motor is wrong at acceleration	Motor cables are mixed up	Connect the motor cables properly
Controller is getting too hot or Controller switches off	Drive train turns not free	Check and make it running smooth
	Wrong gear ratio	Use smaller pinion
	Motor defect	Exchange motor
	Permanent operation	Break driving and wait for the controller cooling down
Brake too weak	Gear ratio much too long	Use a very much smaller pinion
	Setting of the end point of the transmitter is not high enough	Set end point at the tranmsitter to 100 % and perform a transmitter set up
Motor has not enough power or not enough top speed	Gear ratio wrong	Use a smaller pinion
	Transmitter-Setup mixed up	Set end point at the transmitter to 100 % and perform a transmitter set up
	Motor defect	Exchange motor
	Too much wear of the motor	

Diagnostic		
Display/failure	**Reason**	**Correction**
Interference	Power of the transmitter too low	Check batteries and antenna of the transmitter. Antenna must be fully extended!
	Antenna in the car is rolled up	Refer to installation
	Antenna is near the speed controller and/or the battery cables	Refer to installation
	Receiver defect	Exchange receiver
	Crystal defect	Exchange crystals
	Car does not stop	Set the trim triggers at the transmitter. Water or humidity damage, send in for repair!

9. Safety precautions

- Not for children below 14 years. No toy!
- The CE-certificate of this speed controllers does not exempt from the obligation to handle this product with care.
- Use only motors from CS-ELECTRONIC which are intended for the used voltage range!
- Use only high performance batteries from CS-ELECTRONIC.
- Do not leave you RC-model unsupervised as far as a battery is connected. In case of a failure this can be cause fire.
- The speed controller and other electronic components should never get in touch with water. The speed controller must be protected against dust, dirt, humidity and vibration.
- If the motor is connected to the speed controller, the motor may never be run with an external battery. This destroys the speed controller and the guarantee is lost.
- Never reverse connect the polarity of the speed controller. Use a reverse connected protection plug systems. Avoid short circuits and blocked motors.
- All cables and connections must be isolated properly. Short circuits can destroy the speed controller.
- The speed controller may be only used in battery driven, radio controlled models. Another use of the speed controller is not permitted. The use in a model for carrying of passengers is forbidden!
- First check the holdup of your radio control (hold you model tight) before using you model.
- It is not allowed to modify the speed controller in another way as described in this manual.
- Exclusion of liability: The retention of the assembly and the users-instruction as well as the conditions and methods of installation, operating, use and maintenance can not be supervised by CS-ELECTRONIC. Therefore CS-ELECTRONIC does not take over any liability for losses, damages or costs, which result from a faulty use or operating or are connected in any kind to such conditions.
- Only components and spare parts recommended by CS-ELECTRONIC may be used. Use only suitable plugs original from CS-ELECTRONIC.
- Please be sure, that your transmitter is working on a free frequency, is switched on and the throttle trigger is in neutral position before connecting the speed controller and using the model.

10. Technical Data

Operating voltage:	4,8 - 8,4 V
Number of cells NiMH, NiCd:	4 - 8
Number of cells LiPo:	2 - 3
Constant current (brushless M.)	32 A
Shorttime current 5s:	40 A
Temperature protection:	yes
Low voltage protection:	adjustable
Dimension in mm incl. capacitor appr.:	23 x 32 x 14
Weight without cables appr.:	18 g
Weight with cable appr.:	28 g

11. Recommended Motores

C110701	Micro Magnetic Brushless Motor 6500 kv
C110702	Micro Magnetic Brushless Motor 7000 kv
C110703	Micro Magnetic Brushless Motor 7500 kv
C110704	Micro Magnetic Brushless Motor 8000 kv
C110705	Micro Magnetic Brushless Motor 8500 kv
C110706	Micro Magnetic Brushless Motor 9000 kv
C110707	Micro Magnetic Brushless Motor 10000 kv

12. 24 month guarantee

CS-ELECTRONIC GmbH, Johann-Karg-Str. 30, D-85540 Haar b. München, Germany guarantees this product for a period of 24 months from date of purchase. This guarantee applies only to such material of operational defects which are present at the time of purchase. Damages due to wear, overloading, incompetent handling are not covered by this guarantee. The users legal rights and claims under guarantee are not affected by this guarantee. Please check the product carefully for defects before you make a claim or send the item back to us, since we are obliged to make a charge of 10,- EUR, if the product is found free of faults.
We can only handle a guarantee if the used motor is also send to us together with a detailed description of the failure including the used gear ratio and the used battery.

13. Service/returns

Freight collect can not be accepted, Please inform us about your complete address for question we maybe will have. Please do not forget to include your telephone number and (if existent) your email-address as well as your mobile number. If you are a registered dealer of us, please give us your customer code.
CS-ELECTRONIC GmbH, Johann-Karg-Str. 30, D-85540 Haar b. München,
Tel.: +49 89 436 302 99-0, E-Mail: service@cs-electronic.com
In case of questions you can call or email us.

14. CE Conformity Declaration:

We hereby declare that the following product CS-Rocket Competition Best.-Nr.: C130200 conforms with the essential protective requirements as laid down in the directive for harmonizing the statutory directives of the member states concerning electro-magnetic interference (2004/108/CE) and the low voltage guideline (LVD) (2006/95/CE). This product has been tested for electro-magnetic interference in accordance with the following norms:
EN61000-6-1
EN61000-6-3
This declaration was produced by CS-ELECTRONIC GmbH, Johann-Karg-Strasse 30, 85540 Haar bei München and is valid for the manufacturer/importer of the product.

Norbert Forster
85540 Haar, den 30.03.2009

15. Environnemental protection notes

When this product comes to the end of its useful life you must not dispose it in the ordinary domestic waste. The correct method of disposal is to take it to your local collection point for recycling electrical and electronic equipment. Individual markings indicate which material can be recycled. You make an important contribution to the protection of our common environment by recycling the basic materials or recycling redundant materials in other ways. Remove batteries from your device and dispose them at your local collection point for batteries. In case of RC-models you have to remove electronic parts like servos, receivers or speed controllers from the product and these parts must be disposed of with a corresponding collection point for electronic scarp. Please contact your municipal administration for the details of the disposal facility in question.

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